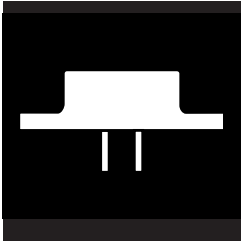


OM1905NKM OM1915NKM  
OM1912NKM

## HERMETIC TO-3 FIXED VOLTAGE NEGATIVE REGULATORS APPROVED TO DESC DRAWINGS



**Three Terminal, Fixed Voltage, 1.5 Amp  
Precision Negative Regulators In Hermetic  
JEDEC TO-3 Package**

### FEATURES

- Output Voltages: -5V, -12V, -15V
- Output Voltages Set Internally to  $\pm 1\%$
- Built-In Thermal Overload Protection
- Short Circuit Current Limiting
- Similar To Industry Standards 7905, 7912, 7915
- Hi-Rel Screening Available

### DESCRIPTION

These three terminal negative regulators are supplied in a hermetically sealed TO-3 metal package . All protective features are designed into the circuit, including thermal shutdown, current limiting and safe-area control. With heat sinking, they can deliver over 1.5 amps of output current. These units feature internally trimmed output voltages to  $\pm 1\%$  of nominal voltage. Standard voltages are -5V, -12V, -15V. These units are ideally suited for Military applications where a hermetically sealed package is required.

### PART NUMBER DESIGNATOR

Standard Military Drawing Number

5962-8874601 YX

5962-8874701 YX

5962-8874801 YX

Omnirel Part Number

OM1905NKM

OM1912NKM

OM1915NKM

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**ABSOLUTE MAXIMUM RATINGS @ 25°C**

Input Voltage. . . . . -35 V

Operating Junction Temperature Range . . . . . - 55°C to + 150°C

Storage Temperature Range . . . . . - 65°C to + 150°C

Typical Power/Thermal Characteristics:

Rated Power @ 25° C  $T_C$  . . . . . 20W $T_A$  . . . . . 3.6WThermal Resistance  $q_{JC}$  . . . . . 4.2°C/W $q_{JA}$  . . . . . 42°C/W**ELECTRICAL CHARACTERISTICS -5 Volt**  $V_{IN} = -10V$ ,  $I_O = 500mA$ , -55°C  $T_A$  125°C (unless otherwise specified)

| Parameter                                 | Symbol                | Test Conditions                                                | Min.    | Max.  | Unit             |
|-------------------------------------------|-----------------------|----------------------------------------------------------------|---------|-------|------------------|
| Output Voltage                            | $V_{OUT}$             | $T_A = 25^\circ C$                                             | -4.95   | -5.05 | V                |
|                                           |                       | $V_{IN} = -7.5V$ to -20V<br>$I_O = 5mA$ to 1.0 A, $P \leq 20W$ | • -4.85 | -5.15 | V                |
| Line Regulation<br>(Note 1)<br>(Note 4)   | $V_{RLINE}$           | $V_{IN} = -7.5V$ to -20V                                       | •       | 12    | mV               |
|                                           |                       |                                                                | •       | 25    | mV               |
|                                           |                       | $V_{IN} = -8.0V$ to -12V                                       | •       | 5     | mV               |
| Load Regulation<br>(Note 1)               | $V_{RLOAD}$           | $I_O = 5mA$ to 1.5 Amp                                         | •       | 20    | mV               |
|                                           |                       |                                                                | •       | 25    | mV               |
|                                           |                       | $I_O = 250mA$ to 750 mA                                        | •       | 15    | mV               |
| Standby Current Drain                     | $I_{SCD}$             |                                                                | •       | 30    | mV               |
|                                           |                       |                                                                | •       | 2.5   | mA               |
| Standby Current Drain<br>Change With Line | $DI_{SCD}$<br>(Line)  | $V_{IN} = -7.0V$ to -20V                                       | •       | 3.0   | mA               |
| Standby Current Drain<br>Change With Load | $DI_{SCD}$<br>(Load)  | $I_O = 5mA$ to 1000mA                                          | •       | 0.4   | mA               |
| Dropout Voltage                           | $V_{DO}$              | $DV_{OUT} = 100mV$ , $I_O = 1.0A$                              | •       | 2.5   | V                |
| Peak Output Current                       | $I_{O(pk)}$           | $T_A = 25^\circ C$                                             | 1.5     | 3.3   | A                |
| Short Circuit Current<br>(Note 2)         | $I_{DS}$              | $V_{IN} = -35V$                                                | •       | 1.2   | A                |
| Ripple Rejection                          | $DV_{IN}$             | $f = 120$ Hz, $DV_{IN} = -10V$                                 | 63      |       | dB               |
|                                           | $DV_{OUT}$            | (Note 3)                                                       | • 60    |       | dB               |
| Output Noise Voltage<br>(Note 3)          | $N_O$                 | $T_A = 25^\circ C$ , $f = 10$ Hz to 100KHz                     |         | 40    | $\mu V/V$<br>RMS |
| Long Term Stability<br>(Note 3)           | $\frac{DV_{OUT}}{Dt}$ | $T_A = 25^\circ C$ , $t = 1000$ hrs.                           |         | 75    | mV               |

**Notes:**

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.

2. Short Circuit protection is only assured up to  $V_{IN} = -35V$ .

3. If not tested, shall be guaranteed to the specified limits.

The • denotes the specifications which apply over the full operating temperature range.

## OM1905NKM - OM1915NKM

### ELECTRICAL CHARACTERISTICS -12 Volt $V_{IN} = -19V$ , $I_O = 500mA$ , $-55^{\circ}C$ $T_A$ $125^{\circ}C$ (unless otherwise specified)

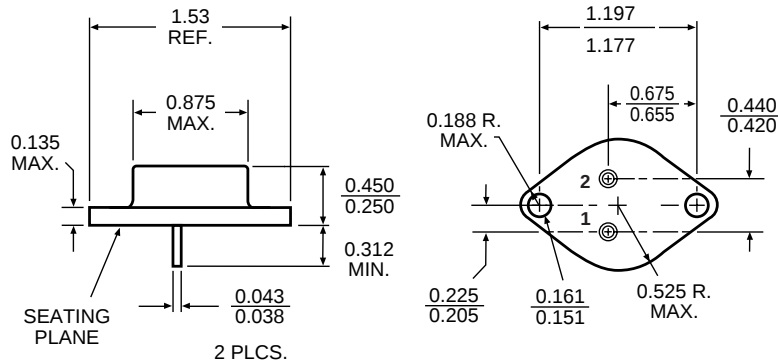
| Parameter                                 | Symbol                     | Test Conditions                                                       | Min.   | Max.   | Unit             |
|-------------------------------------------|----------------------------|-----------------------------------------------------------------------|--------|--------|------------------|
| Output Voltage                            | $V_{OUT}$                  | $T_A = 25^{\circ}C$                                                   | -11.88 | -12.12 | V                |
|                                           |                            | $V_{IN} = -14.5V$ to $-27V$<br>$I_O = 5mA$ to $1.0A$ , $P_D \leq 20W$ | -11.64 | -12.36 | V                |
| Line Regulation<br>(Note 1)<br>(Note 4)   | $V_{RLINE}$                | $V_{IN} = -14.5V$ to $-27V$                                           |        | 20     | mV               |
|                                           |                            |                                                                       |        | 50     | mV               |
|                                           |                            | $V_{IN} = -16V$ to $-22V$                                             |        | 10     | mV               |
| Load Regulation<br>(Note 1)               | $V_{RLOAD}$                | $I_O = 5mA$ to $1.5A$ Amp                                             |        | 32     | mV               |
|                                           |                            |                                                                       |        | 60     | mV               |
|                                           |                            | $I_O = 250mA$ to $750mA$                                              |        | 16     | mV               |
| Standby Current Drain                     | $I_{SCD}$                  |                                                                       |        | 3.5    | mA               |
|                                           |                            |                                                                       |        | 4.0    | mA               |
| Standby Current Drain<br>Change With Line | $DI_{SCD}$<br>(Line)       | $V_{IN} = -14.5V$ to $-27V$                                           |        | 0.8    | mA               |
| Standby Current Drain<br>Change With Load | $DI_{SCD}$<br>(Load)       | $I_O = 5mA$ to $1000mA$                                               |        | 0.5    | mA               |
| Dropout Voltage                           | $V_{DO}$                   | $DV_{OUT} = 100mV$ , $I_O = 1.0A$                                     |        | 1.8    | V                |
| Peak Output Current                       | $I_{O(pk)}$                | $T_A = 25^{\circ}C$ , $I_O = 5mA$ to $1A$                             | 1.5    | 3.3    | A                |
| Short Circuit Current<br>(Note 2)         | $I_{DS}$                   | $V_{IN} = -35V$                                                       |        | 1.2    | A                |
|                                           |                            |                                                                       |        | 2.8    | A                |
| Ripple Rejection                          | $\frac{DV_{IN}}{DV_{OUT}}$ | $f = 120Hz$ , $DV_{IN} = -10V$                                        | 56     |        | dB               |
|                                           |                            | (Note 3)                                                              | 53     |        | dB               |
| Output Noise Voltage<br>(Note 3)          | $N_O$                      | $T_A = 25^{\circ}C$ , $f = 10Hz$ to $100KHz$                          |        | 40     | $\mu V/V$<br>RMS |
| Long Term Stability<br>(Note 3)           | $\frac{DV_{OUT}}{Dt}$      | $T_A = 25^{\circ}C$ , $t = 1000hrs.$                                  |        | 120    | mV               |

#### Notes:

- Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
- Short Circuit protection is only assured up to  $V_{IN} = -35V$ .
- If not tested, shall be guaranteed to the specified limits.  
The • denotes the specifications which apply over the full operating temperature range.
- Minimum load current for full line regulation = 5.0 mA.

## MECHANICAL OUTLINE

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#### Pin Connection

Pin 1: Ground  
Pin 2: Output  
Case: Input

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ELECTRICAL CHARACTERISTICS -15 Volt  $V_{IN} = -23V, I_O = 500mA, -55^{\circ}C \leq T_A \leq 125^{\circ}C$  (unless otherwise specified)

| Parameter                                 | Symbol                     | Test Conditions                                                    | Min.   | Max.   | Unit             |
|-------------------------------------------|----------------------------|--------------------------------------------------------------------|--------|--------|------------------|
| Output Voltage                            | $V_{OUT}$                  | $T_A = 25^{\circ}C$                                                | -14.85 | -15.15 | V                |
|                                           |                            | $V_{IN} = -17.5V$ to $-30V$<br>$I_O = 5mA$ to $1.0A, P_D \leq 20W$ | -14.55 | -15.45 | V                |
| Line Regulation<br>(Note 1)<br>(Note 4)   | $V_{RLINE}$                | $V_{IN} = -17.5V$ to $-30V$                                        | •      | 25     | mV               |
|                                           |                            |                                                                    | •      | 50     | mV               |
|                                           |                            | $V_{IN} = -20V$ to $-26V$                                          | •      | 15     | mV               |
| Load Regulation<br>(Note 1)               | $V_{RLOAD}$                | $I_O = 5mA$ to $1.5A$                                              | •      | 25     | mV               |
|                                           |                            |                                                                    | •      | 35     | mV               |
|                                           |                            | $I_O = 250mA$ to $750mA$                                           | •      | 21     | mV               |
| Standby Current Drain                     | $I_{SCD}$                  |                                                                    | •      | 45     | mV               |
|                                           |                            |                                                                    | •      | 6.0    | mA               |
| Standby Current Drain<br>Change With Line | $DI_{SCD}$<br>(Line)       | $V_{IN} = -17.5V$ to $-30V$                                        | •      | 6.5    | mA               |
| Standby Current Drain<br>Change With Load | $DI_{SCD}$<br>(Load)       | $I_O = 5mA$ to $1000mA$                                            | •      | 0.8    | mA               |
| Dropout Voltage                           | $V_{DO}$                   | $DV_{OUT} = 100mV, I_O = 1.0A$                                     | •      | 0.5    | mA               |
| Peak Output Current                       | $I_{O(pk)}$                | $T_A = 25^{\circ}C$                                                | 1.5    | 3.3    | A                |
| Short Circuit Current<br>(Note 2)         | $I_{DS}$                   | $V_{IN} = -35V$                                                    | •      | 1.2    | A                |
|                                           |                            |                                                                    | •      | 2.8    | A                |
| Ripple Rejection                          | $\frac{DV_{IN}}{DV_{OUT}}$ | $f = 120Hz, DV_{IN} = -10V$                                        | 53     |        | dB               |
|                                           |                            | (Note 3)                                                           | •      | 50     | dB               |
| Output Noise Voltage<br>(Note 3)          | $N_O$                      | $T_A = 25^{\circ}C, f = 10Hz$ to $100KHz$                          |        | 40     | $\mu V/V$<br>RMS |
| Long Term Stability<br>(Note 3)           | $\frac{DV_{OUT}}{Dt}$      | $T_A = 25^{\circ}C, t = 1000hrs.$                                  |        | 150    | mV               |

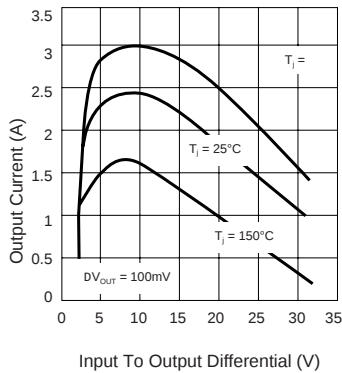
Notes:

1. Load and Line Regulation are specified at a constant junction temperature. Pulse testing with low duty cycle is used. Changes in output voltage due to heating effects must be taken into account separately.
2. Short Circuit protection is only assured up to  $V_{IN} = -35V$ .
3. If not tested, shall be guaranteed to the specified limits.  
The • denotes the specifications which apply over the full operating temperature range.
4. Minimum load current for full line regulation = 5.0 mA.

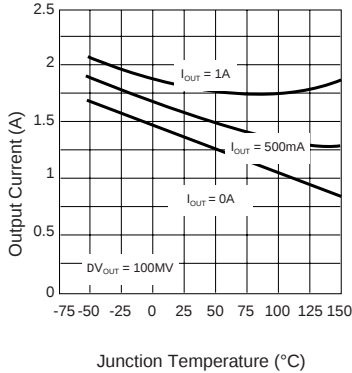
TYPICAL PERFORMANCE CHARACTERISTICS

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PEAK OUTPUT CURRENT



DROPOUT VOLTAGE



RIPPLE REJECTION

